IN THE SUBSITUTE SPECIFICATION

Please cancel paragraphs 002, 013, 014, 015, 016, 017, 019, 020, 021, 024 025, 026, 028, 031, 034 and 035 of the Substitute Specification filed with the application. Please replace those cancelled paragraphs with replacement paragraphs, also 002, 013, 014, 015, 016, 017, 019, 020, 021, 024, 025, 026, 028, 031, 034 and 035, as follows:

[002] The present invention is directed to guide elements, and in particular is directed to turning bars, of a web-producing or web-processing machine. ~~The~~ Each guide element has a plurality of openings on its surface which are adapted for the discharge of a fluid under pressure. The guide element can be placed in at least two angular positions with respect to an incoming web.

[013] In accordance with the present invention, this object is attained by the provision of a guide element of a web-producing or of a web-processing machine with a plurality of openings which are adapted for the passage of fluid under pressure. These openings are situated on the surface of the guide element. The guide element can be brought into at least two angular positions with respect to an incoming web. The openings are embodied as micro-openings with a diameter of less than 500 □m.

[014] The advantages to be gained by the present invention consist, in particular, in that a guide element, which can be flexibly inclined with respect to the web, is formed without a large structural outlay. The guide element is distinguished by an air cushion having a large degree of homogeneity with simultaneously small air losses.

[015] By the use of conventional openings, air forces can be applied point-by-point to the material, in the manner of an impulse of the jet, by the use of which point-by-point air forces, the ~~latter~~ material can be kept away from the respective component, or can be placed against

another component. Because of the distribution of micro-openings, with a high hole density, in accordance with the present invention, a broad support and, as a matter of priority, the effect of a formed air cushion, is applied. The cross section of conventional bores, which were previously used, lay, for example, in the range between 1 and 3 mm. The cross section of the micro-openings of the present invention is smaller by at least the power of ten. Because of this, substantially different effects arise. For example, the distance between the surface with the openings and the web can be reduced, the flow volume of fluid flow can drop considerably and because of this, flow losses, which possibly occur outside of the areas of which the turning bar which act together with the web, can be clearly reduced.

[016] In contrast to generally known components with conventional openings, or bores, a greatly more homogeneous air cushion producing surface is formed with the formation of micro-openings on the surface with opening cross sections in the millimeter range and with a hole distance of several millimeters. In this context, micro-openings are understood to be openings in the surface of the component which have a diameter of less than or equal to 500 □m, and which advantageously are less than or equal to 300 □m, and in particular are less than or equal to 150 □m. A "hole density" of the surface provided with these micro-openings is at least one micro- opening per 5 mm², which equals to a hole density of 0.20/mm², and advantageously is at least one micro-opening per 3.6 mm², which equals to a hole density of 0.28/mm².

[017] The air cushion which is formed on the turning bars in accordance with the present invention is homogenized by configuring the openings as micro-openings. The volume flow exiting, per unit of area, can be reduced in such a way that a flow loss can be negligibly small even in the areas of the turning bar around which the web does not loop.

[019] In order to achieve a uniform distribution of air exiting from the surface, in the case of employing micro- porous material, and without at the same time ~~large~~ requiring large layer

thicknesses of the material with high flow resistance, it is useful for the component to have a rigid, air-permeable support, to which support the micro-porous material has been applied as a layer. Such a rigid, air permeable support can be charged with compressed air, which flows out of the support through the micro-porous layer and in this way forms an air cushion on the surface of the component.

[020] The support itself can be porous and will have a ~~better~~ greater air permeability than that of the overlying micro-porous material. ~~It~~ The support can also be formed of a flat material or of a shaped material which encloses a hollow space and which is provided with air outlet openings. Combinations of these alternatives can also be considered.

[021] To achieve a uniform air distribution, it is moreover desirable that the thickness of the micro-porous layer correspond at least to the distance between adjoining openings.

[024] Shown are in:

Fig. 1a, a schematic ~~representation~~ end view of the turning bar in accordance with the present invention in a first position, in

Fig. 1b, a schematic ~~representation~~ end view of the turning bar in a second position, in

Fig. 1c, a schematic top view of the turning bar depicted in Fig. 1a, in

Fig. 1d, a schematic top view of the turning bar depicted in Fig. 1b, in

Fig. 2, a perspective view, partially in cross-section through the turning bar with a support and with a coating with porous material around the entire circumference of the turning bar, in

Fig. 3, a perspective view of the turning bar in accordance with the present invention and with micro-bores arranged over its entire circumference, in

Fig. 4a, a schematic ~~representation~~ end view of a pivotable turning bar in a different embodiment, ~~and~~ in

Fig. 4b, a schematic top view of the turning bar depicted in Fig 4a, and in

Fig. 5, a cross-section through a turning bar in accordance with Fig. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[025] A guide element 01, such as, for example, a web guide element 01, is used in a web-producing or a web-processing machine, such as, for example a paper-making machine, a winding machine, a packaging machine, or, in particular, in a printing press, for guiding, or for effecting a change in direction of a web 02, such as, for example, web 02 of material, or web 02 of material to be imprinted, which web 02 of material runs over the guide element 01. In particular, the guide element 01 is embodied as a turning bar 01, by the use of which, depending on its position relative to the direction of travel of the incoming or running-up web 02, a change in direction, by approximately +90□ by or approximately -90□, is provided for the web 02 by having the web 02 looped around the turning bar 01. A pair of two parallel turning bars 01, each inclined by 45□ with respect to the web transport direction, can be used for effecting a lateral offset of the web 02 of material. For tipping the web 01, as a pair of turning bars 01, which cross each other and which are inclined by 45□ or -45□, respectively in respect to the web transport direction can be provided. Several pairs of turning bars are advantageously arranged in a path of travel of a web 02.

[026] The turning bar 01, or the pair of turning bars, can be arranged downstream of a printing group and upstream of a folding apparatus, or can be located downstream of a dryer and upstream of a folding apparatus, of a rotary printing press. In a typical configuration, the turning bar 01 has an exterior diameter of from 60 to 100 mm, for example, and has a length of more than 1,200 mm, for example. In this case, the turning bar 01 has, or each of the two turning

bars 01 has at least two positions and each turning bar 01 is, or are pivotable over 90□ in particular~~, wherein, in~~ . An end 20 of the turning bar 01 is connected by a swivel joint 22 to a turning bar holder 24 which, in turn, is attached to a side frame 26 of the web-processing machine, generally as depicted and described in U.S. Patent No. 5,082,533. In a first position, a web 02 is looped around a first half of the surface area, as seen in Fig. 1a and 1c, and a second half of the surface area is being looped in a second position of the turning bar 01, as seen in Fig. 1b and 1d.

[028] The turning bar 01 has micro-openings 03 in its surface area and which micro-openings 03 are arranged, in the circumferential direction of the turning bar surface, on the side of the turning bar which is looped around by the web, in the respective operating situation, as well as in the side of the surface of the turning bar 01 that is not covered by the web 02, i.e. the side facing away from it. Therefore, the turning bar 01 has micro- openings 03 distributed over its full circumference of 360□, on the facing side, as well on the as facing-away side of the turning bar, at least on its longitudinal section that is intended for being looped by the web. In a preferred embodiment of the present invention, no device or mechanism is provided for the turning bar 01 which, during the operation of the web-guiding or web-producing machine, would stop the flow of the fluid from the hollow chamber 04 through the micro-openings 03 on the side of the turning bar which is facing away from the web 02. This means that in each one of the at least two above-mentioned operating positions[[,]] of the turning bar 01, that a fluid can be, or is, flowing out of the micro-openings 03 in a complete circumferential area of 360□. The change of position of the turning bar 01 from one position into the other position requires only pivoting of the turning bar, but no complete covering of the openings, or interruption of the passage between the hollow turning bar interior chamber 04 and the micro-opening 03.

[031] The choice of the micro-porous, air-permeable material, the dimensions and its charging with pressure have been selected in such a way that 1 to 20 standard cubic meters of air per m^2

emerge from the air outlet surface of the sinter material 06 per hour, and in particular 2 to 15 standard cubic meters per m^2 emerge from the surface per hour. An air output of 3 to 7 standard cubic meters per m^2 per hour of the surface area of the guide element 01 is particularly advantageous.

[034] To achieve a uniform distribution of the air exiting at the outer surface of the micro-porous material 06, without requiring, at the same time, large layer thicknesses of the micro-porous material 06, with a correspondingly high flow resistance, it is practical, in an advantageous embodiment of the present invention, that the turning bar 01 has a solid support 07, which support 07 is air-permeable at least in part and to which the micro-porous material 06 has been applied as a surface layer 06, as seen in Fig. 2. Such a solid support 07 can be charged with compressed air, which compressed air flows out of the solid support 07 through the micro-porous layer 06 and, in this way, forms an air cushion at the outer surface of the turning bar 01. In a particularly advantageous embodiment of the present invention, the porous material 06 is therefore not embodied as a supporting solid body, either with or without a frame structure, but instead as a layer 06 on a, in particular metallic, underlying support material 07, which support material 07 has passages 08 or through-openings 08. A structure is understood to be inclusive of the "non-supporting" micro-porous, air-permeable layer 06, together with the support 07, in contrast to, for example, the "supporting" layers which are known from the prior art. The non supporting, micro porous, air permeable layer 06 is supported, over its entire layer length and entire layer width, on a multitude of support points of the solid support 07. For example, the solid support 07 has, over its width and length which is active together with the layer 06, a plurality of non-connected passages 08. This embodiment is clearly different from an embodiment in which a porous material 06, which is extending over the entire width, and which is active together with the web 02, is configured to be self-supporting over this distance, and is only supported in the end area on a frame or support, and therefore must have an appropriate

thickness.

[035] In the depicted preferred embodiment represented in Fig. 2, the solid support 07 ~~material~~ substantially absorbs the weight, torsion, bending and/or shearing forces of the component, because of which an appropriate wall thickness, such as, for example, greater than 3 mm, and in particular greater than 5 mm of the solid support 07 and/or an appropriately reinforced construction have been selected. The solid support 07 which, for example, borders the hollow chamber 04, and which faces toward the layer 06, or which constitutes the hollow chamber 04 by being appropriately shaped, such as, for example, by being tube-shaped, has, on the side coated with the porous material 06, a plurality of openings 09 of the passages 08 for feeding the compressed air[[,]] directed from the hollow space 04, through the passages 08, into the porous material 06. Porous material 06 can also be partially contained in the openings 09 of the passages 08 of the support 07 in the area of the walls.